**FFID:** CA957172450400
**Size:** 301,000 acres
**Mission:** Aerospace research, development, test, and evaluation and support to United States and allies
**HRS Score:** 33.62; placed on NPL in August 1990
**IAG Status:** Federal facility agreement signed in 1990
**Contaminants:** Waste oils, solvents, VOCs, petroleum hydrocarbons, petroleum/oil/lubricants, rocket fuel, potential CWM, and heavy metals
**Media Affected:** Surface water, sediment, groundwater, and soil
**Funding to Date:** $169.1 million
**Estimated Cost to Completion (Completion Year):** $214.0 million (FY2015)
**Final Remedy in Place or Response Complete Date for All Sites:** FY2006
**Five-Year Review Status:** NA

***Kern County, California***

## Restoration Background

In FY93, preliminary assessment and site inspection (PA/SI) studies identified solid waste management units and the following site types at this installation: underground storage tanks (USTs), fuel pipelines, landfills, hazardous waste disposal areas, and wastewater and surface water runoff collection areas.

The Edwards Environmental Restoration Program comprises 461 sites and areas of concern (AOCs), and 131 sites and AOCs are being investigated. One site is in long-term monitoring (LTM); 40 are in the cleanup, operations, construction, Record of Decision, or decision document (DD) stages; and 289 require no further investigation (NFI).

Interim remedial actions (IRAs) have included installing five groundwater extraction and treatment systems to remove JP-4 jet fuel and solvents, removing over 350 USTs and numerous drums of hazardous waste, stabilizing soil to immobilize dioxin and heavy metals, capping the fire fighting training facility, using bioventing at nine sites, and installing seven soil vapor extraction (SVE) and treatment systems. By the end of FY00, 1.3 million pounds of contamination had been recycled or destroyed.

In FY96, UST sites were cleaned and closed. At Operable Unit (OU) 1, two dual-phase extraction systems were built to treat petroleum hydrocarbon and volatile organic compound (VOC) contamination in groundwater and soil. At OU2, a bioventing system was installed and construction began on a dual-phase extraction system. DDs were signed for 40 AOCs in OUs 1 and 2.

In FY97, 24 early actions and 15 site cleanups occurred. Base-owned drill rigs and an on-base laboratory were used to accelerate fieldwork. The dual-phase extraction systems constructed in FY96 began operating.

In FY98, five engineering evaluations and cost analyses (EE/CAs) and three treatability study work plans were approved by the regulatory agencies. Eight sites at OU2 were cleaned through excavation, asphalt recycling, and soil stabilization, and bioventing systems were installed at five sites. A two-phase treatment system at Site 45 reduced contaminants to below regulatory action levels, and the treatment system was moved to Site 11.

In FY99, a pump-and-treat system was installed at Site 37 in OU4. A basewide ecological risk assessment (ERA) and validation study began at Sites 25, 31, 37, and 133 (OUs 4 and 8).

The installation's Restoration Advisory Board (RAB) has provided input to the cleanup program since January 1995 and distributes a monthly newsletter to more than 5,000 stakeholders.

## FY00 Restoration Progress

LTM of groundwater contaminant plumes and other groundwater studies were performed in all 10 OUs. Treatment systems operated at multiple Installation Restoration Program (IRP) sites. New soil or groundwater systems were installed at Sites 14, 18, and 23. Investigation and screening of over 20 sites and AOCs were conducted. Testing of free-product skimming and SVE and air sparging (AS) continued at Site 85. A report on the test results, recommending free-product recovery and AS, was submitted. A 6-month biotrickling filter pilot test at Site 17 was completed. The work plan Phase I ERA scoping assessment was prepared. A validation study at IRP Sites 37 and 133 determined that solvents in shallow groundwater have no effect on plants and burrowing animals. NFI letters were signed for 38 sites and AOCs.

A dual extraction system with vapor treatment was installed at Site 18. A bioventing system was installed and began operating at Site 14. Excavation and soil stabilization were used to remediate metals-contaminated soil at Site 96. An SVE system was installed at Site 23. A mobile dual extraction system was used to remove contamination from soil and groundwater at five sites. The EE/CA recommending excavation of potential chemical warfare material from Site 426 was released to the regulatory agencies for comment. The estimated cost of completing environmental restoration at this installation has changed significantly because of technical and regulatory issues.

The installation developed an interactive CD-ROM containing briefings and exercise information from a 3-day RAB training session held in August.

## Plan of Action

- Continue using innovative technologies to remediate IRP sites in FY01
- Test exchange resin technology for treating perchlorate at Site 285 in FY01
- Install a landfill cover to close out the Site 13 inactive landfill in FY01
- Develop LTM strategy for emerging sampling analysis technology in FY01
- Continue mobile dual extraction system for hot-spot removal at OU1 in FY01
- Prepare for excavation of chemical warfare material at Site 426, to be performed in FY02

### FY01 Funding by Phase and Relative Risk